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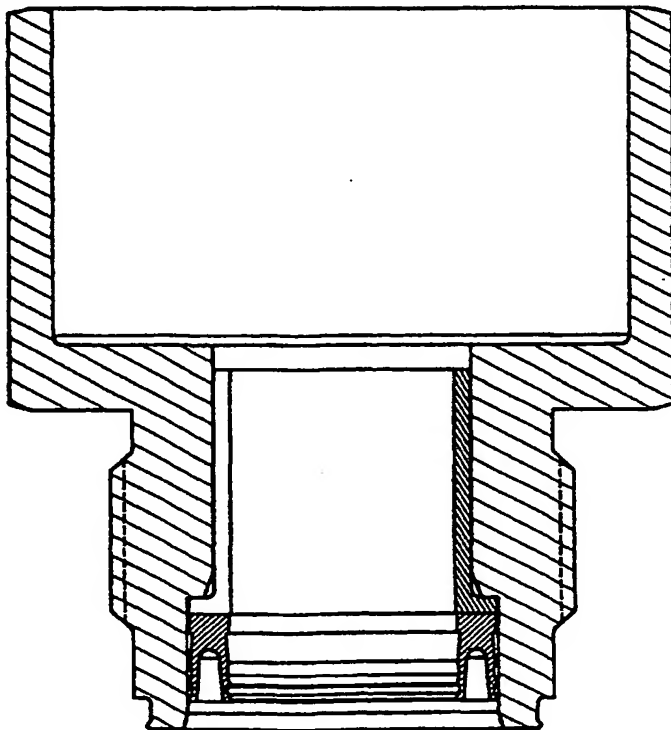
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(54) Title: WET CUP THROAT SEAL AND BEARING ASSEMBLY



(57) Abstract: Wet cup throat seal (3) and bearing (2) combination is designed for use in a reciprocating piston pump where in the wet cup (1) is designed to hold the seal assembly thereby insuring proper displacement rod (5) alignment and maximizing seal life. The construction also allows for easy and inexpensive replacement and allows piston seals (6) and throat seals (3) to be interchangeable.

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**WET CUP THROAT SEAL AND BEARING ASSEMBLY****TECHNICAL FIELD**

A wet cup throat seal and bearing combination is designed for use in a  
5 reciprocating piston pump where in the wet cup is designed to hold the seal assembly.

**BACKGROUND ART**

Wet cups and throat seals are well known for use in reciprocating piston pumps.  
While prior art devices have been generally satisfactory, it is always desirable to increase  
10 ease of manufacture, seal life and ease of servicing while decreasing cost.

**DISCLOSURE OF THE INVENTION**

A wet cup is machined from hexagonal stainless steel bar stock. A bearing is a cut  
shoulder bearing which is machined from acetal bar. The throat seal is a standard U-cup  
15 seal. The wet cup and the bearing are assembled into an outlet housing. The bearing  
guides the displacement rod and the seal prevents leakage as the displacement rod  
reciprocates.

The wet cup and cylinder are sized so that the piston seals and throat seals are  
interchangeable. The shoulder on the bearing insures that the bearing will remain coaxial

with the wet cup and the pump. The combination can be serviced by unscrewing the wet cup from the outlet housing while the bearing and throat seal can be removed from the wet cup without tools.

These and other objects and advantages of the invention will appear more fully from the following description made in conjunction with the accompanying drawings wherein like reference characters refer to the same or similar parts throughout the several views.

#### **BRIEF DESCRIPTION OF DRAWINGS**

10           Figure 1 is an exploded view of a pump utilizing the inventive wet cup bearing and seal assembly.

Figure 2 is an exploded view of the inventive wet cup bearing and seal assembly.

Figure 3 is a cross-sectional view of the inventive wet cup bearing and seal assembly.

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#### **BEST MODE FOR CARRYING OUT THE INVENTION**

Wet cup 1 is machined from hexagonal stainless steel bar stock. Bearing 2 is a cut shoulder bearing which is machined from acetal bar. Throat seal 3 is a standard U-cup seal. The combination is assembled as shown in FIGS 1, 2, and 3. Wet cup 1 is assembled

into an outlet housing 4 and the bearing 2 to an outlet housing 4. The bearing 2 guides the displacement rod 5 and seal 3 prevents leakage as the displacement rod reciprocates.

Wet cup 1 and cylinder 7 are sized so that piston seals 6 and throat seals 3 are interchangeable. Such a combination insures long seal life in acid catalyzed lacquers without requiring adjustments to the seals. The shoulder on the bearing insures that the bearing will remain coaxial with the wet cup and the pump. The combination can be serviced by unscrewing the wet cup 1 from the outlet housing 4 while the bearing 2 and throat seal 3 can be removed from the wet cup without tools. There is no requirement to disassemble the remainder of the displacement pump.

10 In the event of throat seal failure and there are no spare seals on hand, a use could switch the downward facing piston seal and the throat seal and continue operating the pump.

It is contemplated that various changes and modifications may be made to the assembly without departing from the spirit and scope of the invention as defined by the following claims.

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CLAIMS

1. A wet cup throat seal and bearing assembly for use on a reciprocating piston pump having a housing and a displacement rod which reciprocates along an axis, said assembly comprising:
  - 5 a wet cup threadedly engaged in said housing;
  - an plastic bearing having a shoulder and a cut parallel to said axis; and
  - a throat seal, wherein said bearing and said throat seal are disposed around said displacement rod and retained between said housing and said wet cup.
2. The wet cup throat seal and bearing assembly of claim 1 wherein said throat seal is  
10 a U-cup seal.
3. The wet cup throat seal and bearing assembly of claim 1 wherein said bearing is formed from acetal.

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